Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
DIPLOMA ENGINEERING - SEMESTER–V • EXAMINATION – SUMMER 2013

Subject Code: 355501   **Date: 10-05-2013**
Subject Name: F.D.
Time: 10:30 am - 01:00 pm   **Total Marks: 70**
Instructions:
1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **English version is considered to be Authentic.**

Q.1	(a)	Write classification of engineering material as per ASME Sec.-II in chart form. Write factors affecting selection of material.	07
	(b)	Explain the type of corrosion, its causes and method of prevention.	07
Q.2			
	(a)	Explain different factor to be considered in designing a machine component	07
	(b)	Explain factor of safety. List the important factors that influence the factor of safety.	07

<div align="center">OR</div>

	(b)	Find the center of gravity of a channel section 100 x 50 x 15mm	07
Q.3			
	(a)	What is stress concentration? Explain stress concentration due to holes and notches.	07
	(b)	A mild steel rod of 15 mm diameter was tested for Tensile test with a gauge length of 70 mm. Following observation were recorded : Final length = 80 mm ; Final diameter = 12 mm ; Yield Load = 40 KN ; Ultimate Load = 60 KN; Calculate : (1) Yield Stress (2) Ultimate Tensile Stress (3) % Elongation (4) % Reduction in area	07

<div align="center">OR</div>

Q.3	(a)	Explain failure of riveted joint with neat sketch.	07
	(b)	Explain advantage and disadvantages of welded joint over riveted joint.	07
Q.4			
	(a)	Explain strength of welded joint in the following cases 1. Circular filler weld subjected to torsion 2. Circular filler weld subjected to bending moment	07
	(b)	A plate 120 mm wide 10 mm thick is to be welded to another plate by means of parallel fillet weld. The plates are subjected are to load of 40KN. Find the length of the weld so them maximum stress does not exceed $55 N/mm^2$.consider the joint first under static loading and than under fatigue loading. Assume stress concentration factor 2.7	07

<div align="center">OR</div>

Q. 4	(a)	Explain the design consideration in design of pressure vessels with internal pressure.	07
	(b)	Explain design preliminaries of pressure vessels as per ASME Sec VIII	07
Q.5			

(a) What is the minimum required thickness of cylindrical shell with the following parameter:- 07
1. Material SA 516 GR- 70
2. Inside dia =120 inch = 3000mm
3. Corrosion allowance = 0.25 inch = 6.00mm
4. Weld joint type 1, 100% RT
5. Design pressure = 300 psi = 2.25 mpa
6. Design temperature = 500 F = 350^0 C
7. Stress allowable from section II-D S= 20.000 psi=128mpa

(b) Explain various types of heads and closures for vessel as per codes. 07

OR

Q.5 (a) Explain classification of various types of structures in chart form 07
(b) Explain in details the factors affecting design of structures. 07

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